Chapter 10

Escalation of Real Wages in Bangladesh: Is it the Beginning of Structural Transformation?[1]

Xiaobo Zhang, Shahidur Rashid, Ahmad Kaikaus, and Akhter Ahmed

10.1 Introduction

With about 1,200 people per square kilometer, Bangladesh is one the most densely populated countries on the planet. The reality of intense population pressure is reflected in commonly portrayed images in the popular media, such as crowded buses and trains with passengers on top, endless lines of human-powered rickshaws, and deaths in the thousands from both natural and man-made disasters. With increasing landlessness, and a heavy reliance on labor markets, understanding the dynamics of wage formation in this setting is critically important for identifying the process of economic transformation and poverty reduction. However, both theories and empirics of wage determination in Bangladesh, and elsewhere in developing countries, have intrigued economists for decades.[2] The neoclassical theories, where labor demand and wages are determined by the marginal physical product, cannot explain stable wages amid seemingly unlimited supply of workers and massive involuntary unemployment in developing countries like Bangladesh. The reason is simple: if market clearing conditions hold, unemployed workers should bid down wages until full employment has reached. One set of theories that provide a more coherent explanation of stable wages amid abundant labor supply has been the nutrition-based efficiency wage theory, originally proposed

[1] An earlier version of the chapter was published in *World Development* 64: 273-285, December, 2014. This is reproduced with permission of the publisher.

[2] Ranis (2012) revisits the debates in contemporary contexts and Bardhan (1979) presents both theoretical and empirical analysis of the competing theories.

by Leibenstein (1957) and Mazumdar (1959). The premise of this theory is that since productivity depends on consumption, it is in the interest of the employers to pay a wage that ensures minimum calorie requirement of the workers so that they can work effectively.

However, neither neoclassical nor efficiency wage theories seem to be consistent with an emerging trend in Bangladesh—a sharp increase in real wage rate in recent years. This trend is quite contrary to the findings of earlier empirical studies on agricultural wage formation in the country. Using historical data from the 1950s and 1960s, Bose (1968) demonstrated that real agricultural wages in Bangladesh (then East Pakistan) had been declining since the end of colonial rule in the late 1940s. Subsequent studies—notably Khan (1977 and 1984), Boyce (1989), Ravallion (1990), and Boyce and Ravallion (1991)—echoed similar concerns about the downward trend in real agricultural wages. Extending Boyce and Ravallion's (1991) data set (1949-81) to 1999-2000, Rashid (2002) argued that the trend in the relative price of labor and food documented in the earlier studies had changed in the 1990s. In particular, rice was no longer the key determinant of agricultural wages, as predicted by the subsistence wage hypothesis.[3] However, none of the earlier studies reported a sharply rising trend with analysis of the underlying factors within a coherent theoretical framework. This chapter attempts to bridge this knowledge gap. Unlike previous studies, it (a) uses data from multiple sources, (b) analyzes the sources of income growth and their relationship with rising wages, (c) triangulates the results in light of the theories of economic transformation, and (d) highlights implications for poverty reduction.

The results suggest that real wage rates, especially in rural areas, have accelerated since the early 2000s. Triangulating these results with other evidence, we demonstrate that rising wages in Bangladesh is consistent with Arthur Lewis's (1954) dual economy model with unlimited labor supply. The evidence suggests that Bangladesh is at the stage of development commonly termed as the *Lewis Turning Point,* where workers begin to gain greater bargaining power in negotiating wages. Key drivers behind this trend have been increased nonfarm job opportunities, especially for women in the growing manufacturing sector. As labor costs have risen in other developing countries, such as China and India, Bangladesh has emerged as a new destination for labor-intensive industries (Zhang, Yang, and Wang 2011; IHS Global Insight 2010; Sincavage, Haub, and Sharma

[3] For detailed discussion on the subsistence wage theory in the context of Bangladesh, see Ahmed (1981).

2010). In the mid-1980s, the garment sector employed only 120 thousand people and exported about US$31 million worth of merchandise. By the mid-1990s, the sector employed 1.3 million people, mostly women, and exports reached US$2.2 billion. It grew further in the 2000s and exports soared to more than US$19 billion, equivalent to nearly 80 percent of the country's exports, and provided direct employment to about 4.0 million people in 2012 (Rashid, Tefera, Lemma, and Yunus 2014). The booming manufacturing sector has attracted millions of surplus workers, in particular women, from rural areas (Kabeer and Mahmud 2004). Initially, as laborers moved out of the agriculture sector, the impact on rural wages was minimal due to the presence of surplus labor. However, over time, as the supply of seemingly unlimited labor was exhausted, the terms of trade in the labor market started to shift in favor of workers, leading to a tightening labor market and an increase in agricultural wages.

Since physical labor is the primary asset for the poor, a change in the labor market can translate into improvement in the poor's livelihood and lead to a reduction in poverty. This appears to be the case in Bangladesh over the past decade when the country has made remarkable progress in reducing poverty. The poverty rate dropped from 49 percent in 2000 to 32 percent in 2010, falling by 1.7 percentage points per year (World Bank 2013). To put these numbers in perspective, about 1.6 million people have escaped poverty every year since 2000. In comparison, the rate of decline in poverty was much more modest between 1995 and 2000, from 51 percent to 49 percent, equivalent to only 0.4 percentage points per year.

The rest of the chapter is organized as follows. Section 10.2 presents a conceptual framework explaining the rise in wages as predicted by the Lewis's (1954) model. This is followed by a discussion on the analysis of two data sources to show that rural real wages accelerated in the second half of the decade spanning 2000 to 2010 in Section 10.3. Section 10.4 presents analysis of both household surveys and other official statistics to identify the factors behind an observed rise in real wages. The paper concludes with a summary of findings and their implications.

10.2 Conceptual Framework

Economic development is a process of transferring workers from low-productivity sectors, such as agricultural production to more productive sectors, such as manufacturing. In the early stage of structural transformation, the outmigration of rural workers from the agriculture sector to the manufacturing or nonfarm sector has little effect on wages of both sectors due

to excess unemployment and underemployment in rural areas. A defining feature of this early stage of development is that urban wages far exceed rural wages. Additionally, at this stage, wages remain low and stable in both sectors. Over time, as the economy grows there comes a point at which the excess labor in rural areas becomes fully absorbed by the emerging nonfarm sector, initiating a rise in wages. This was the key insight advanced by Lewis (1954), and such a point was coined as the "Lewis turning point".[4]

However, the empirical evidence on the existence of a Lewis turning point in South Asia is mixed. It has been widely shown that the East Asian economies experienced a noticeable Lewis turning point (Fei and Ranis 1975; Fields 2004; Zhang, Yang, and Wang 2011). However, studies on South Asia have failed to uncover such a trend as of 1970s (Rosenzweig 1980). In case of Bangladesh, the earlier studies presented results—that is, a declining trend in real wages at least up to early 1980s—that were quite contrary to the prediction of Lewis model. This is either because the Lewis model of economic development with unlimited labor did not hold in these countries; or because these countries did not reach the turning point at the time when the studies were conducted. As economic transformation occurs over a long horizon of time, studies are unlikely to discern the turning point if the sample period is not long enough to encompass the transformation.

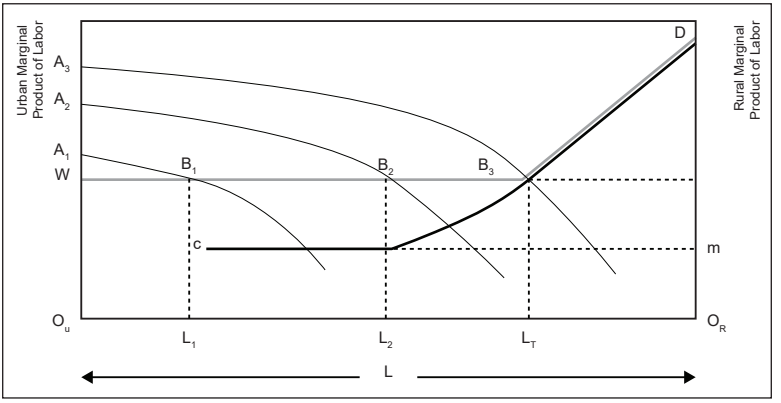
Figure 10.1 provides an illustration of the Lewis turning point in a dual economy set up where L is the total size of the labor force in the economy and O_R and O_U are origins of the rural and urban sectors, respectively.[5] The marginal product of labor in the urban sector is AB (A_1B_1, A_2B_2, and so on), whereas the marginal product of labor in the rural sector is CD. One key feature of the rural marginal product of labor, CD, is that there is a long flat line when the amount of rural labor is greater than O_RL_2. Initially, let us assume that the marginal productivity of labor in the urban sector is A_1B_1. At this point, the urban wage is w and the rural wage is m, with corresponding labor allocation of O_UL_1 in the urban sector and O_RL_1 in the rural sector. With capital accumulation and technological development, the

[4] For a good review of the literature, see Fields (2004).

[5] The model also applies to the farm and nonfarm sector within the rural areas. Growing non-agricultural employment with rural areas draws workers out of agricultural labor and into the nonfarm sector in the same way that growing employment opportunities in cities attract labors from rural areas to cities. As a matter of fact, many nonfarm employment opportunities, such as garment jobs, are in the rural areas. As more labor moves to the rural nonfarm sector, agricultural labor market becomes tight, eventually leading to rising agricultural wages.

marginal product of labor curve *AB* shifts rightward and the share of the labor force in urban sector increases. For example, when the curve shifts to A_2B_2, employment in the urban sector increases from O_UL_1 to O_UL_2; and the rural share declines by a similar magnitude. The rural wage at this point (the first Lewis turning point) starts to increase because the rural marginal product of labor curve, *CD*, has passed the horizontal stage. From then on, the rural wage continues to increase; urban wages remain constant until *AB* reaches the point L_T or the second Lewis turning point, where rural and urban wages converge and both begin to rise simultaneously.

Figure 10.1: Conceptual Model of Lewis Turning Point



Note: The thick gray line represents the urban wage curve; the thick black line indicates the rural wage curve.

Source: Adapted from Basu (1997).

This model predicts that the escalation of rural wages precedes the increase in urban wages which takes place after the economy reaches the Lewis turning point, L_T. The analysis in this chapter attempts to determine whether such a point can be detected in recent data from Bangladesh, where scholars have expressed concern that the economy is not growing fast enough to absorb the surplus labor (Islam 2007).

10.3 Evidence on Rising Real Wages

This section presents an analysis of data from two sources to document the pattern of rising real wages in Bangladesh.

10.3.1 Evidence Based on Monthly Wage Data

The first data source is monthly wage data from *Monthly Statistical Bulletins,* published by the Bangladesh Bureau of Statistics (BBS), which reports both rural and urban wages. The BBS collects information on daily wages for unskilled workers (e.g., helpers in construction, carpentry, and other semi-skilled works) in seven major cities (Dhaka, Chittagong, Rajshahi, Khulna, Narayanganj, Sylhet, and Barisal) and wages of agricultural workers in 25 districts.

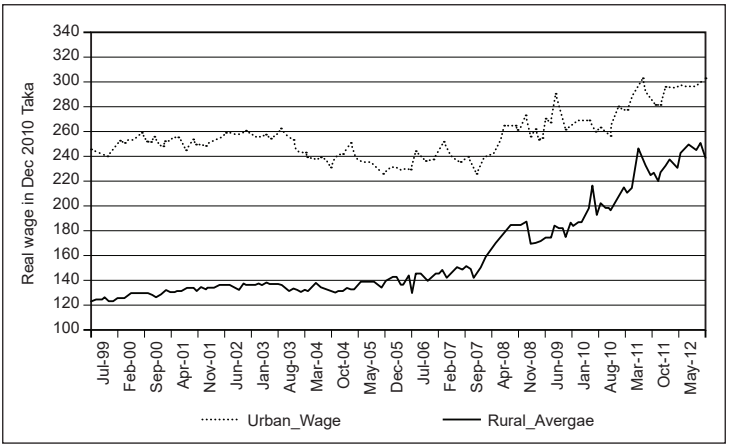
Figure 10.2 plots average urban and rural monthly real wages from July 1999 through October 2012. The nominal wages are converted to December 2010 prices using three different deflators, namely General Consumer Price Index (GCPI), Food CPI (FCPI), and the Coarse Rice Price (CRP). Panel A of the figure, where wages are deflated by the GCPI, clearly shows that the gap between the real rural and urban wages has narrowed, especially since 2008. Also, the growth rate of rural real wages has outstripped that of urban real wages. While rural real wages witnessed a rapid increase, urban real wages remained rather stagnant and did not exhibit an upward trend until early 2008. This finding is consistent with the prediction of the Lewis model that the escalation of rural real wages precedes that of urban wages.

The next two plots in Figure 10.2, referred to as 10.2b and 10.2c, show the trends in urban and rural wages deflated by FCPI and coarse rice price, respectively. Food accounts for the largest share of expenditures and wages are the main source of income for most rural poor in Bangladesh. Therefore, the dynamics of wages and food prices can serve as a good proxy for changes in the poverty dynamics (Boyce and Ravallion 1991). We also use wholesale price of coarse rice to deflate the wages. This is motivated by the fact that rice is the main staple in the country accounting for more than 70 percent of total calorie consumption for an average person in Bangladesh.[6] Moreover, most of the earlier studies on wage determination in Bangladesh had used rice as one of the key explanatory variables, and in some cases, results are used to draw welfare implications (e.g., Ravallion 1990). These two figures also serve as the robustness check of the figure in panel A. Notice that Figures 10.2a and 10.2b exhibit almost identical trends: rural real wages were roughly stable prior to the mid-2000s. However, since 2005, the growth of real rural wages has accelerated. The urban real wages slightly declined until 2007 and then rebounded.

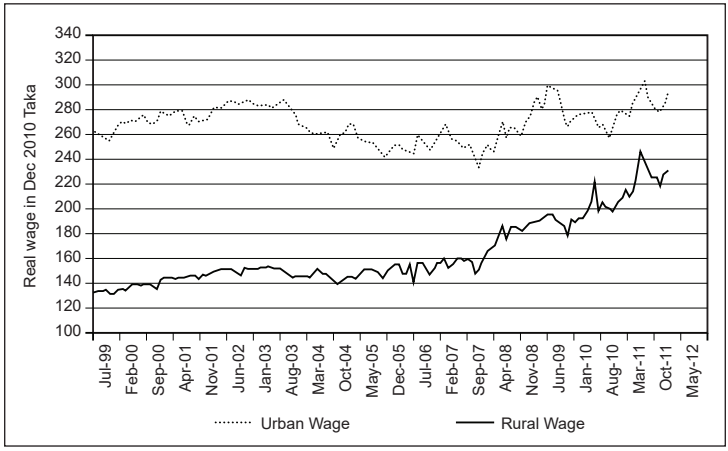
[6] Available statistics suggest that rice contributes more than 70 percent of total calorie consumption for an average person (IRRI 2012; Hossain, Naher, and Shahabuddin 2005).

Data on local rice prices are readily available. Official statistical publications report the prices of three types of rice produced and consumed in Bangladesh—coarse, medium, and fine. We use the price of coarse rice, as it is the cheapest and is commonly consumed by the poor. Figure 10.2c demonstrates the extent to which the rise in food prices negatively affected purchasing power in rural and urban areas. In 2001, workers in cities and rural areas could afford to buy 12 kilograms and 6 kilograms of rice, respectively, with their daily wage. However, at the height of the global food crisis in 2008, daily wages in urban and rural areas were worth only about 6 kilograms and 4 kilograms of rice, respectively. Facing the rising food prices, as Dorosh and Rashid (2013) report, the government implemented a number of policies to stabilize rice prices including open market sales and scaling up safety nets programs for the poor. Therefore, the welfare loss of the daily workers may not be as dramatic as the dip in wages to the rice price ratio in 2007-2008 indicates. By 2012, the purchasing power of rural daily wages had bounced back to the equivalent of about 11 kilograms of rice. If we compare only the initial and final data points within the sample period, we see that both rural and urban real wages have surged.

Figure 10.2: Monthly Real Wages of Rural and Urban Workers in Bangladesh, June 2001-2012. (a) Urban and Rural Real Wage at December 2010 Prices (Deflated by General CPI), (b) Urban and Real Wage at December 2010 Prices (Deflated by Food CPI), and (c) Nominal Daily Wages/Coarse Rice Price



a



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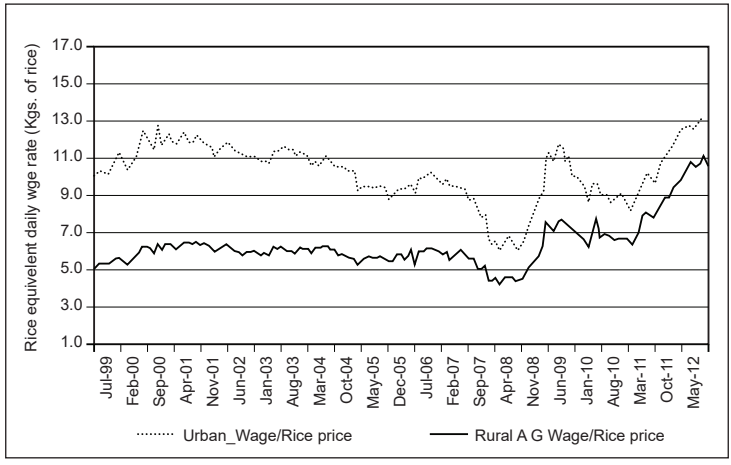


c

Note: The rural sample excludes the rural wage from the mega-cities. Urban wages are for the unskilled workers (such as, helpers in construction sites, carpenters, and other sectors). The base year is set to 2009-2010.

Source: The monthly wage data are obtained from Monthly Statistical Bulletin (2001-2011), Department of Agricultural Marketing (DAM), Bangladesh. The real wages are deflated by general consumer price index.

10.3.2 Evidence Based on Household Income and Expenditure Survey (HIES) Data

While the monthly wage data have the advantage of higher frequency and longer time coverage, they have an important drawback: the sample covers only a small group of unskilled workers from selected locations. Therefore, to check the robustness of the aforementioned results further, we use the Bangladesh Household Income and Expenditure Survey (HIES), which is nationally representative and conducted every five years. A key advantage of using these data is that they are more representative of the population. However, we compromise on the frequency of observations, as the HIES is conducted every five years rather than monthly or annually. Based on the recent four waves of HIES—1995, 2000, 2005, and 2010—we tabulate the wage trend in agricultural peak and lean seasons.

Table 10.1 presents average rural wages, calculated from the HIES community surveys, by gender and by peak and lean agricultural seasons. Panel A of the table lists nominal daily wages, which are not comparable across the survey rounds due to inflation. As before, we use three different deflators to compute real wages: General Consumer Price Index (GCPI) with 2010 as a base (Panel B), Basic Needs Price Index (BNPI) (Panel C), and coarse rice prices (Panel D). While the magnitudes vary, two broad points are clear from these numbers: (a) irrespective of the deflators, wage rates of the female workers have increased faster than male workers; and (b) relative to earlier years, wage rates have accelerated since 2005 for both male and female workers.

Table 10.1: Rural Nominal and Real Wages by Gender and Season (at December 2010 Prices)

Year	Peak Season			Lean Season		
	Male	Female	Male/ Female	Male	Female	Male/ Female
Panel A: Nominal Daily Wage						
2010	194.33	141.62	1.37	154.92	113.08	1.37
2005	89.09	56.57	1.57	70.39	47.43	1.48
2000	70.29	48.2	1.46	55.95	39.96	1.40
1995	53.38	35.15	1.52	42.09	29.54	1.42
Growth rate 1995-2000 (%)	31.68	37.13	-3.97	32.93	35.27	-1.73
Growth rate 2000-2005 (%)	26.75	17.37	7.99	25.81	18.69	5.99
Growth rate 2005-2010 (%)	118.13	150.34	-12.87	120.09	138.41	-7.69
Growth rate 2000-2010 (%)	176.47	193.82	-5.90	176.89	182.98	-2.15

Continued

Continued from Table 10.1

Year	Peak Season			Lean Season		
	Male	Female	Male/ Female	Male	Female	Male/ Female
Panel B: Real Wages (GCPI)						
2010	193.55	141.03	1.37	154.16	112.57	1.37
2005	133.66	84.87	1.57	105.52	71.13	1.48
2000	134.01	92.25	1.45	106.6	76.31	1.40
1995	128.57	84.72	1.52	101.49	71.2	1.43
Growth rate 1995-2000 (%)	4.23	8.89	-4.28	5.03	7.18	-2.00
Growth rate 2000-2005 (%)	-0.26	-8.00	8.41	-1.01	-6.79	6.20
Growth rate 2005-2010 (%)	44.81	66.17	-12.86	46.10	58.26	-7.69
Growth rate 2000-2010 (%)	44.43	52.88	-5.53	44.62	47.52	-1.97
Panel C: Real Wages (BNPI)						
2010	193.55	141.03	1.37	154.16	112.57	1.37
2005	169.2	107.43	1.57	133.58	90.04	1.48
2000	164.66	113.35	1.45	130.98	93.77	1.40
Growth rate 2000-2005 (%)	2.76	-5.22	8.42	1.99	-3.98	6.21
Growth rate 2005-2010 (%)	14.39	31.28	-12.86	15.41	25.02	-7.69
Growth rate 2000-2010 (%)	17.55	24.42	-5.53	17.70	20.05	-1.96
Panel D: Real Wages (Rice Price)						
2010	202.79	147.89	1.37	161.74	118.17	1.37
2005	170.83	108.5	1.57	134.87	90.91	1.48
2000	182.29	125.01	1.46	145.13	103.6	1.40
1995	137.95	91.11	1.51	108.72	76.41	1.42
Growth rate 1995-2000 (%)	32.14	37.21	-3.69	33.49	35.58	-1.54
Growth rate 2000-2005 (%)	-6.29	-13.21	7.97	-7.07	-12.25	5.90
Growth rate 2005-2010 (%)	18.71	36.30	-12.91	19.92	29.99	-7.74
Growth rate 2000-2010 (%)	11.25	18.30	-5.96	11.44	14.06	-2.30

Notes: GCPI = general consumer price index; BNPI = Basic Needs Price Index. The real wages are in 2010 prices weighted and deflated spatially. The nominal wages are from HIES community surveys. Since BNPI does not exist for 1995, the real wages do not include that year. We normalized rice price in 2010 as one.

Source: Authors' calculation based on four rounds of HIES by the BBS: 1995, 2000, 2005, and 2010.

The General Consumer Price Index may underestimate the inflation level, especially for the poor (Deaton 2003; World Bank 2008). Furthermore, using a national GCPI to adjust wages across regions masks the spatial

difference in price levels. To remedy these potential problems, we use two alternative deflators. In Panel C, we replace the GCPI with the Basic Needs Price Index (BNPI) as a deflator. The BNPI is based on a national upper poverty line, which is computed using both the price index and the Cost of Basic Needs (CBN) method weighted by population (Lanjouw and Lanjouw 2001). Specifically, the food poverty lines for 2010-11 were updated from the 2005 food poverty lines using stratum-specific Törnqvist indices, whereas the upper and lower nonfood poverty lines were re-estimated using the Cost of Basic Needs method, as had been done for 2005 (World Bank 2010). Note that BNPI was designed to deflate only across the latest three rounds, which is why values for 1995 are omitted from Panel C. Additional details pertaining to the construction of the BNPI and the benefit of its use can be referred to the World Bank (2008).

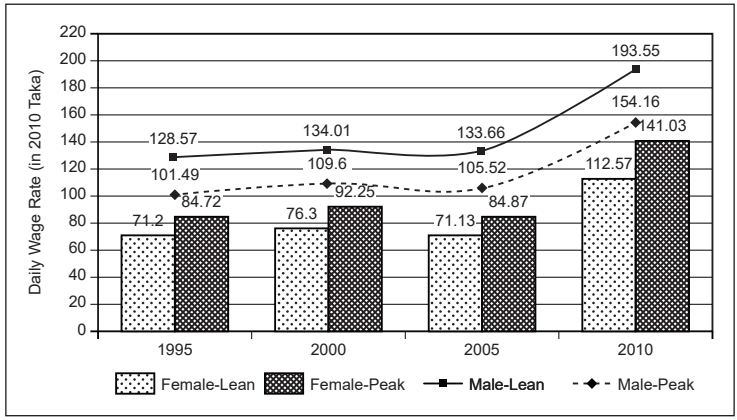
Using the regional-specific BNPI, we first compute real wages at the rural division level and then derive the national rural real wages based on the division of real wages. The magnitude of real wage growth rates shown in Panel C dropped significantly compared with Panel B after adjusting for spatial price differences. We observe that, in both peak and lean seasons, male wages grew 18 percent from 2000 to 2010, whereas female wages rose 24 percent during the peak season, and 20 percent during the lean season. Interestingly, over the past decade, the male-to-female wage gap has been declining from 1.45 and 1.40 during the peak and lean seasons, respectively, to 1.37 in both seasons, which suggests gender-differentiated wage growth patterns that are in line with the growth of the manufacturing industry (in particular, garments and textiles) in Bangladesh.

Panel D presents national real wages adjusted by rice price. We first use the coarse rice price index at the local level to deflate nominal wages. We then compute the national average of real wages based on local real wages. Once again, we find that real wages grew much faster in 2005-2010 than in the earlier period of 2000-2005. In fact, when using this deflator, real wages dropped between 2000 and 2005, while the growth rate for 2005-2010 is slower than that reported in Panel A. This finding is perhaps because rice prices escalated more rapidly than the prices of other items in the consumption basket during the peak of the food price crisis in 2007 and 2008.

Figure 10.3 shows the trends of real rural wages from 1995 to 2010. Nominal wages are deflated by rural CPI; and the bars and lines in the figure represent female and male wages, respectively. It is apparent from this figure that from 1995 to 2000, real wages only inched up, ranging from 4.2 percent growth for male workers in peak seasons to 7.2 percent growth for female

workers in lean seasons. From 2000 to 2005, however, real wages declined for both male and female workers, regardless of seasons. By contrast, with an annual growth rate of about 10 percent, real wages have improved dramatically since 2005. In particular, the rate of growth of female real wages has overtaken real wage growth rates for males, resulting in the reduction of male-to-female wage ratio from 1.57 in 1995 to 1.37 in 2010.

Figure 10.3: Seasonality of Real Wages by Gender



Note: Nominal wages are deflated by the rural consumer price index (CPI) is used to adjust real wages.

Source: Authors' calculation based on four rounds of HIES by the BBS: 1995, 2000, 2005, and 2010.

Having observed real wage escalations in rural areas, one may wonder whether urban wages have exhibited a similar pattern. Table 10.2 presents nominal and real daily wages in cities. Unlike the rural surveys, HIES did not have a community module for urban regions. As a result, we had to extract the wage data from household surveys. Even in cities, a significant portion of people work in the informal sector earning daily wages. For those earning monthly salaries in the formal sector, we converted salaries into daily wages using the average number of working days per month. A small number of people reported incomes from both salaries and daily wages. In this case, we computed the average daily wage based on monthly salaries derived from formal jobs and daily wages earned in informal jobs weighted by the respective number of working days. Similar to Table 10.1, we also use CPI and BNPI as deflators to derive real wages.

Table 10.2: Urban Nominal and Real Daily Wages by Gender (HIES)

	Male	Female	Male/ Female	National
Panel A: Nominal Wages				
2010	270.11	232.32	1.16	260.26
2005	161.65	149.75	1.08	157.57
2000	112.85	71.51	1.58	107.27
Growth rate 2000-2005 (%)	43.24	109.41	-31.60	46.89
Growth rate 2005-2010 (%)	67.10	55.14	7.71	65.17
Growth rate 2000-2010 (%)	139.35	224.88	-26.33	142.62
Panel B: Real Wages (GCPI)				
2010	253.43	223.21	1.14	245.11
2005	230.33	216.51	1.06	225.24
2000	203.23	129.26	1.57	194.07
Growth rate 2000-2005 (%)	13.33	67.50	-32.34	16.06
Growth rate 2005-2010 (%)	10.03	3.09	6.73	8.82
Growth rate 2000-2010 (%)	24.70	72.68	-27.79	26.30
Panel C: Real Wages (BNPI)				
2010	253.43	223.21	1.14	245.11
2005	291.57	274.08	1.06	285.12
2000	249.72	158.84	1.57	238.46
Growth rate 2000-2005 (%)	16.76	72.55	-32.33	19.57
Growth rate 2005-2010 (%)	-13.08	-18.56	6.73	-14.03
Growth rate 2000-2010 (%)	1.49	40.53	-27.78	2.79

Note: The real wages are in 2010 prices, weighted and deflated spatially. The nominal wages are obtained from HIES household surveys. Urban daily wage is calculated as follows: (annualized daily wage + annual salary)/number of days worked in the year. Wages are from wage earners 15 years and older.

Source: Household, Income, and Expenditure Survey by BBS. Using three rounds: 2000, 2005, and 2010.

Panel A of the table presents the estimates of urban nominal wages in 2000, 2005, and 2010. Female wages more than doubled from 2000 to 2005, whereas male wages increased by only 43 percent during the same period. In the later period of 2005-2010, both male and female wages surged by more than 55 percent. However, the pattern of nominal wages does not necessarily reflect the trend of real wages due to inflation. In Panel B, we deflate the nominal wages by GCPI. After the price adjustment, the

previously torrid growth in wages becomes less impressive. Female real wages rose by 68 percent from 2000 to 2005 but only 3 percent from 2005 to 2010. The growth rate of male real wages was only 13 percent and 10 percent, respectively, in the two periods. Panel C presents real wages adjusted by BNPI. Since BNPI reports a higher inflation rate than GCPI during 2005-2010, it is natural to observe a drop in real wages during this period. Interestingly, the finding that female real wages quickly caught up to their male counterparts in 2000-2005 continues to hold. Interestingly, the sudden surge in female real wages between 2000 and 2005 resembles the pattern seen using the GCPI. Over the whole period of 2000-2010, female real wages witnessed a 41 percent increase.

Because women account for a small share of the labor force, the national wage patterns more closely resemble male wage patterns. Unlike the rapid growth in real wages in rural areas, the growth of urban real wages was lackluster. On the whole, the real wage patterns derived from HIES are largely in sync with those observed from the monthly wage data. Results from both methods indicate that the escalation of real wages did not happen until the second half of the 2000s. Also, the increase in real wages was more pronounced in rural areas than in cities. Once again, these findings are consistent with the model prediction (shown in Figure 10.1) that the increase in real wages tends to first manifest in the low-productivity sector.

To summarize, the evidence from two different data sources suggests that real wages in Bangladesh, which were either stable or declining in the past, have accelerated significantly in recent years. A particularly striking feature of the trend is that real wages of female workers have grown faster than the real wage of male workers. What explains such a trend in a country with an abundant supply of labor? We try to answer this question next by analyzing likely factors behind this observed wage growth.

10.4 Plausible Factors behind Rising Real Wages

10.4.1 Nonfarm-Sector Expansion

According to the Lewis hypothesis, the key to reaching the turning point is to increase the marginal product of labor in the nonfarm sector. This prediction has two important components: (a) a change in the allocation of labor forces across sectors; and (b) capital accumulation and reinvestments to increase productivity. There are several evidences to suggest that there has indeed been a change in the allocation of labor force in urban and rural areas. According to the Bangladesh Labor Force Survey (LFS) data, the size of active labor force in urban areas increased from 9.2 million in 1999-2000

to 13.3 million in 2010. In other words, active urban force grew by almost 45 percent, which was about 7 percent higher than the growth in rural labor force. On the aggregate, labor force in agriculture has declined from about 52 percent in 2002-2003 to 47 percent in 2010.[7] However, it should be noted that LFS survey misses out a significant change in rural Bangladesh. Rural areas in Bangladesh today are much different from what they were 20 years ago. Many small towns have become very vibrant, equipped with modern amenities like electricity, banking with ATM, and running water with low lift pump. Yet, they are not considered as urban centers by the Bangladesh Bureau of Statistics. As a result, estimates of urban labor force are actually underestimated. The panel evidence, presented in Rashid, Tefera, Lemma, and Yunus (2014), reinforces this fact. This study uses four rounds of panel survey of rural households, conducted between 1988 and 2008, by the Bangladesh Institute of Development Studies (BIDS) and the International Rice Research Institute (IRRI). The results show that the share of income from agriculture in rural Bangladesh has declined from 58 percent in 1988 to 42 percent in 2008, representing a total reversal in the farm-nonfarm compositions.

We present three sets of evidence on the second implications. First, reinvestment is possible when an economy generates surpluses. According to available macroeconomic time series data, domestic saving had experienced a prolonged spell of negative growth (-1.4 percent per year) during 1960-1979. This began to change in the 1980s. Annual growth in domestic savings averaged nearly 12 percent during 1980-2000 and 8.23 percent growth since 2001.[8] Second, since the early-1980s, the Bangladesh Government has made greater efforts to attract FDI, particularly in the garments sector. As shown in Figure 10.4, FDI in the garments sector has grown from less than US$2 million in 1995 to US$113.8 billion in 2012. The FDI flow appears to correspond well with the increase in the number of workers in the sector, which has grown from about 120 thousand in the mid-1980s to about 4 million in 2012.[9]

[7] See the Report on Labor Force Survey 2010 http://203.112.218.66/WebTestApplication/userfiles/Image/Latest%20Statistics%20Release/LFS%20Report%202010.pdf.

[8] Authors' calculations based on WDI data.

[9] There is a debate in the literature on the relationship between FDI, labor productivity and wages. The impact of FDI depends upon the type and locations of FDI. If FDI mainly targets natural resources in a developing country, it may create a resource curse and hinder industrial development. If FDI is aligned with a host country's comparative advantage, such as cheap labor, it often increases local productivity and labor income (Lin 2012). As a matter of fact, there is a large body of literature documenting the positive role of FDI on productivity and wages in East Asian economies, such as China (Zhang and Zhang 2003; Wooster and Diebel 2010).

Finally, remittances primarily from the migrant workers have been significant in the past decade or so. According to the available official statistics, total remittance to the country in 1980 was about US$300 million, which grew by more than 10 percent per year to reach US$780 million by 1990. Since then, it grew at 13.5 percent per year and reached about US$12.0 billion in 2012, accounting for 44 percent of the total remittances to the LDCs (UNCTAD 2012). At the national level, the share of remittances in GDP increased from 0.20 percent in 1976 to about 11 percent in 2012. Put it differently, as a share of GDP, remittance now accounts for more than half of total agricultural value added (18 percent) in the country. Our analysis of the HIES data confirms these aggregate numbers. As shown in Table 11.3, the share of remittances in total household income rose from 7 percent in 2000 to 9.4 percent in 2010, and this change is more pronounced in rural areas. In 2000, the share of remittance income in rural areas was 7.5 percent, whereas, in 2010, this figure jumped to 10.5 percent.

Table 10.3: Share of Income from Different Sources (%)

Year	Farm	Nonfarm	Social Safety Net	Remittances	Miscellaneous
Panel A: National					
2010	27.87	47.84	0.33	9.40	14.56
2005	30.29	42.86	0.45	7.19	19.19
2000	32.64	40.65	0.42	7.04	19.17
Panel B: Urban					
2010	7.30	71.16	0.08	6.42	15.04
2005	8.33	69.20	0.14	4.82	17.50
2000	6.10	68.10	0.06	5.35	20.47
Panel C: Rural					
2010	35.41	39.29	0.42	10.49	14.38
2005	37.74	33.93	0.56	7.99	19.77
2000	39.39	33.67	0.52	7.47	18.84

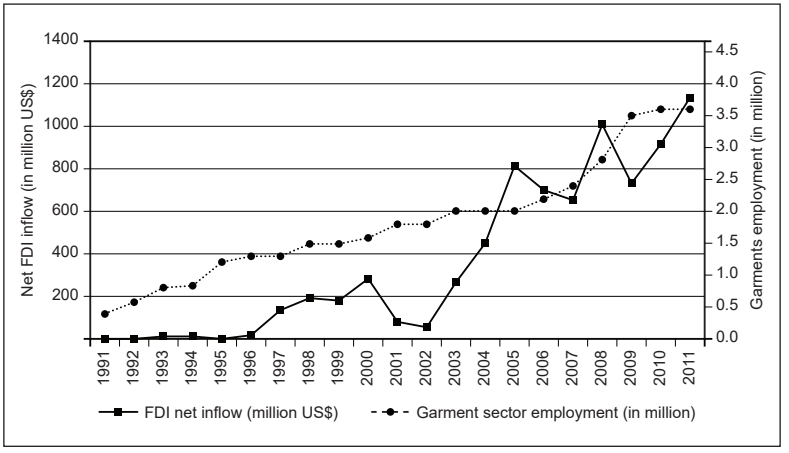
Note: Farm income refers to net income derived from farm, forestry, and fishing. Nonfarm income includes nonfarm self-employment income and nonfarm wage income. Nonfarm self-employment income refers to net income derived from nonfarm enterprises plus daily wages. Nonagricultural wage income is net income of (nonfarm wages/salary + program transfers + stipends + housing rental). In 2010, the major social safety programs include Vulnerable Group Feeding (VGF), Cash for Work, Old

Age Allowance, Vulnerable Group Development (VGD), Primary Education Stipend Project, Food for Work, Test Relief, Allowance for Widow and Distressed Women, Agricultural Subsidy and Fuel Price Support for Marginal Farmers, Gratuitous Relief (GR), and Food for Education (FFE). In 2000, the social safety nets captured in HIES were VGF, VGD, FFE, and GR.

Source: Authors' calculations based on HIES in 2000, 2005, and 2010.

Some of these growing remittances have possibly trickled down to business investments, such as building commercial fish ponds, which in turn would generate nonfarm jobs. Of course, a significant portion of remittances are likely to have been spent on consumption as observed in the literature in other countries (Nguyen and Mont 2012). If so, remittance would have a direct impact on poverty reduction. It has been documented that massive inflow of remittances may depress the labor supply in developing countries. In the case of Bangladesh, the labor force participation rate has remained stable (Inchauste, Olivieri, Jamie, and Winkler 2012), suggesting that the effect on labor supply, if any, seems to be rather limited.

Figure 10.4: Foreign Direct Investment (FDI) and Employment in the Garments Sector



Source: Bangladesh Garments Manufacturers and Exporters Association (BGMEA) worker database (http://garmentworkers.com.bd/); and the FDI data are from the World Bank (2012).

To examine components within the nonfarm sector that have been significant, we further disaggregate nonfarm income into three categories by gender in rural and urban areas in Table 10.4: daily wages, self-employment, and salaried employment. The left panel lists the major income sources in 2000, 2010, and 2015, while the right panel presents the t-test p-values between the sample periods, 2000-2005, 2005-2010, and 2000-2010. Two of these three categories are clearly defined, but the self-employment may vary from little street vendors to small enterprises. Therefore, we do not call income from self-employment as micro-enterprise income as Khandker, Samad, and Ali (2013) do. The test results are in total conformity with the other results and in line with Lewis's (1954) predictions. Per capita income from daily wage income has increased several folds in rural and urban areas and the change is statistically significant. For instance, rural real female monthly wage was only BDT 321 in 2000 and jumped to BDT 913 in 2010, while rural male wage increased from BDT 476 to BDT 902 in the same period. Clearly, female wages have grown faster than male wages. In comparison, the salaried income has improved much slowly. The change in urban female salaried income from 2000 to 2010 is not statistically significant. Accordingly, the gap between daily wage income and salaried income has narrowed.

The informal sector accounts for a large share of total employment in Bangladesh. As shown in Table 10.5, more than 70 percent of employment was concentrated in the informal sector in 2010. However, the share of employment in the formal sector steadily increased from 2000 to 2010 in both rural and urban areas for both males and females.[10] In 2010, more than half of the workers (54.4 percent) in urban areas were employed in the formal sector, compared with only 17.2 percent in rural areas. By comparison, even though declining since 2000, the share of informal-sector employment in rural areas has been persistently high. For the nation as a whole, only 19.4 percent of the employed workforce worked in the formal sector in 2000, but jumped to 27.9 percent in 2010. More interestingly, the share of women working in the formal sector surpassed the share of males, and the gap widened from 10 percentage points (28.15 percent for females and 18.15 percent for males) in 2000 to nearly 13 percentage points (39.16 percent for females and 26.21 percent for males) in 2010, perhaps due to the disproportionately increasing demand for female workers in the manufacturing sector, especially the garments industry.

[10] The formal sector includes government organization, autonomous body, private office, public mill/factory, private mill/factory, and local government or non-governmental organization; it excludes household and other salaried wages. The informal sector includes all informal-sector workers.

Table 10.4: Changes in Nonfarm Income by Sources in Bangladesh, 2000-2010

Location/ Gender		Per capita income	2000	2005	2010	t-tests for difference between the means (p-values)		
						2000-2005	2000-2010	2005-2010
Rural	Female	Rural female	742	767	1,297	0.753	0.006	0.003
		Daily wage	321	246	913	0.269	0.000	0.000
		Self-employed	376	537	1,289	0.081	0.000	0.000
		Salaried income	470	512	1,255	0.681	0.014	0.015
	Male	Rural male	1,241	856	1,323	0.277	0.010	0.000
		Daily wage	274	326	902	0.043	0.000	0.000
		Self-employed income	476	503	1,286	0.537	0.000	0.000
		Salaried income	1,139	533	1,271	0.250	0.556	0.000
Urban	Female	Urban female	1,946	2,415	2,388	0.601	0.020	0.040
		Daily wage	513	224	1,121	0.000	0.000	0.000
		Self-employed	884	835	2,312	0.794	0.000	0.000
		Salaried income	1,808	1,913	2,236	0.936	0.471	0.622
	Male	Urban male	2,299	1,843	2,387	0.006	0.013	0.000
		Daily wage	563	319	1,148	0.000	0.000	0.000
		Self-employed income	1,217	866	2,236	0.000	0.000	0.000
		Salaried income	1,623	1,183	2,191	0.037	0.003	0.000

Continued

Continued from Table 10.4

Location/ Gender		Per capita income	2000	2005	2010	t-tests for difference between the means (p-values)		
						2000-2005	2000-2010	2005-2010
National	Female	National female	1,301	1,246	1,792	0.873	0.016	0.009
		Daily wage	405	237	994	0.001	0.000	0.000
		Self-employed	636	642	1,855	0.952	0.000	0.000
		Salaried income	1,032	1,011	1,699	0.967	0.037	0.033
	Male	National male urban	1,676	1,185	1,809	0.034	0.010	0.000
		Daily wage	385	323	1,002	0.005	0.000	0.000
		Self-employed income	810	645	1,802	0.000	0.000	0.000
		Salaried income	1,336	777	1,696	0.092	0.018	0.000

Notes: All income figures are deflated by CGPI (2010 = 100). Non-earned income (such as, remittance, transfers from safety nets or public works programs, pension, etc.) are excluded in calculating the nonfarm income.

Source: Authors' calculation based on the HIES survey rounds (2000, 2005, and 2010).

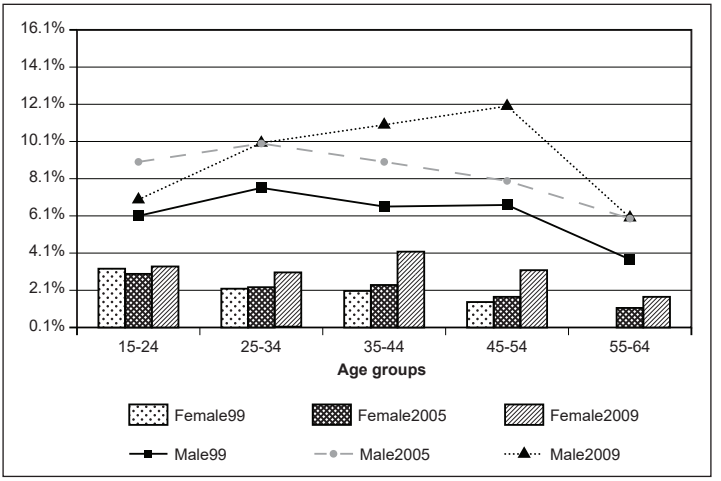
Table 10.5: Share of Employment in Formal and Informal Activities by Sector and Gender (%)

Year	National	Urban	Rural	Female	Male
Panel A: Formal Sector					
2010	27.89	54.40	17.24	39.06	26.21
2005	23.49	44.71	15.59	34.40	22.04
2000	19.41	43.12	12.93	28.15	18.19
Panel B: Informal Sector					
2010	71.20	43.83	82.20	57.31	73.16
2005	75.16	51.54	83.66	60.67	76.92
2000	79.56	53.74	86.45	68.53	81.00

Note: The numbers in the formal and informal sectors may not add up to 100 as some people report activities in both sectors.

Source: Authors' calculations based on HIES in 2000, 2005, and 2010.

Figure 10.5: Share of Working-Age Population in Manufacturing Sector by Gender



Source: Labor Force Surveys, different years.

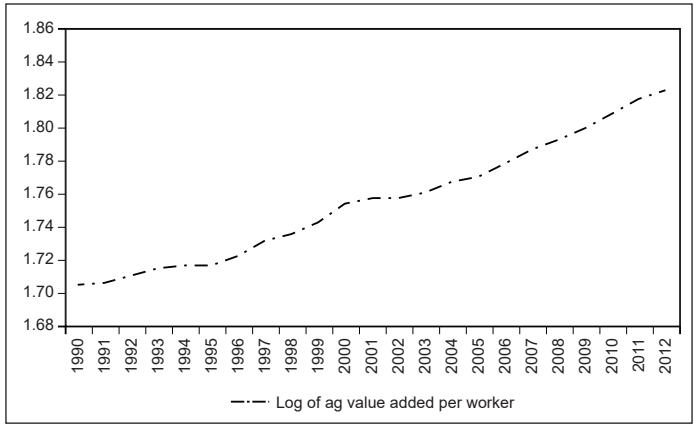
Figure 10.5 plots the share of working-age population employed in the manufacturing sector by gender and age cohorts for 1999-2000, 2005-06, and 2009-2010. The estimates are generated from three rounds of the National Labor Force Survey (BBS 1999-2000, 2005-2006, 2009-2010). The share of women working in the manufacturing sector, represented by the bars in Figure 10.5, has significantly increased from 2005 to 2010 across all age groups with

most noticeable change occurring among the 35-44 age-cohort. Over time, men have also become more likely to work in the manufacturing sector for most age groups, as shown by the lines in the figure. However, the demand for female workers in the manufacturing sector has increased disproportionately as compared with men, which is perhaps why female wages have increased more rapidly than that of their male counterparts in the past several years.

10.4.2 Alternative Interpretations of Rising Wages

The wage formation under Lewis theory does not conform to the neoclassical theory in that wage rate does not equate with the marginal product of labor. In other words, if neoclassical theory were true in Bangladesh, the observed trend in real wages should match the trend in labor productivity. To examine this hypothesis, we compare the agricultural value-added per worker over time (Figure 10.6). The growth in labor productivity follows a rather linear trend, without any major kinks. In other words, agricultural labor productivity does not display a trend similar to the trend in rural real wages, shown earlier. Thus, we conclude that labor productivity alone cannot explain the acceleration of wage growth in 2005-2010. However, there can be other factors that have triggered the recent wage escalation. One such factor is the massive increase in the public spending on social safety net programs. Here is how the explanation goes. As the poor receive transfers from large scale social safety net programs, their reservation wage may go up and hence a sudden increase in public transfers can cause wages to go up; and since most of the transfers are in the rural areas, the escalation in wages should be more pronounced in rural wages.

Figure 10.6: Agricultural Labor Productivity



Source: The data are from World Bank Development Indicator, 2012.

For a better understanding of the source of such perception, consider the well-known 100-Day Employment Generation Programme (100-DEGP) as an example. This program, introduced in 2008-2009, had a budget of BDT 12.0 billion, equivalent to US$150 million, covering nearly two million beneficiaries. On average, each beneficiary received BDT 6,000 (US$75). However, this program was replaced by a scaled-down version of the program called the Employment Generation for Hardcore Poor (EGHP). The first phase of EGHP was implemented during September to November 2009, with a budget of BDT 1.76 billion targeting 0.44 million poor. The award size for each beneficiary averaged BDT 4,000 (about US$50). The second phase of EGHP, which lasted from March to April 2010, targeted 1.2 million poor people with a budget of BDT 6,000 million (about US$60 per person). Although the second phase of EGHP was significantly larger than the first, it was still far below 100-DEGP in scale. A common perception in the country is that this massive government transfer might have contributed to an increase in real wages. However, when we mapped the timing of these transfers programs with the trends in real wages presented earlier, we see that rural real wages had taken off before these new programs were launched. During the same period, the garment sector alone generated 0.5 million new jobs. Assuming each garment worker earned US$720 per year (US$60 per month multiplied by 12 months), the increase in earnings derived from the new jobs created in the garments sector dwarfed the corresponding rise in earnings due to 100-DEGP and EGHP.

Since HIES includes detailed questions on incomes received from different government programs, we can use these data to further investigate whether government transfers have played a greater role in household income over time. Table 10.6 presents the share of income derived from various social safety nets and public transfer programs.[11] For the country as a whole, individuals received only 0.34 percent of their income from social programs in 2010.[12] Compared to 2000, when the figure was 0.42 percent, the share has actually declined. Because most of the poor live in rural areas, naturally rural people receive a larger share of their income from social safety nets than their city counterparts. However, even among the rural

[11] For 2005, it was impossible to calculate the price of the in-kind social safety nets, as the questionnaire did not specify what was received, only the amount (kg). For 2010, values for in-kind payments, such as rice and wheat, were taken from the community survey. In 2000, social safety nets were defined as wheat or rice received from four programs.

[12] Certainly, we shall cast a cautious note here because most of the government programs are geographically and self-targeted programs and given the sampling framework, safety nets program beneficiaries are under-represented in the HIES data. Therefore, the overall share of transfer income may mask the true picture of the positive changes to income that the poor received.

population, the share of transfer income in the total household income was as low as 0.44 percent in 2010 and 0.52 percent in 2000. It is improbable that transfers constituting such small shares of household incomes could shape the general wage picture. Moreover, the trend in transfer income shares does not resemble the pattern of real wages. In comparison, the share of income derived from nonfarm activities and remittances increased from 48 percent in 2000 to 57 percent in 2010.

Table 10.6: Share of Household Income from Social Safety Nets (%)

HIES Survey Years	Safety-net transfers as % total HH income		
	National	Rural	Urban
2000	0.42	0.52	0.06
2005	0.47	0.58	0.14
2010	0.34	0.44	0.09

Source: Authors' calculations based on HIES 2000, 2005, and 2010.

Based on these analyses, we conclude that while the government programs might explain a blip in the real wage patterns during 2008-2009, the infusion of government transfers does not seem to fit into the long-term trend in real wages. Overall, the evidence suggests that the hypothesis that government transfers played a major role in boosting real wages is a weak one.

The expansion of microfinance institutions (MFIs) is thought to be another contributing factor to rising real wages. The MFI membership has increased from about 8 million in 1996 to over 34 million in 2010 although, in the past several years, the growth has leveled off (World Bank 2013). The loan disbursements grew from over BDT 15 billion (USD$ 0.34 billion, or $43 per member, $3 per person) in 1997 to about BDT 370 billion (USD$ 5.3 billion, or $155 per member, $36 per person) in 2010 (World Bank 2013). The share of the loan from microcredit in total starting capital increased from 3.4 percent in 2000 to 8.2 percent in 2010. Yet, compared with the FDI in the garments sector (USD$114 billion) in 2012, the size of MFIs is much smaller, accounting for only 4.6 percent. One major role of MFIs is to help microenterprises ease their credit constraints. Most likely due to the rapid spread of MFIs, the percentage of microenterprises reporting credit constraints declined from 27.1 percent in 2000 to 22.1 percent in 2010. Nonetheless, despite the penetration of MFIs, the share of income from microenterprises in total nonfarm income has dropped from 41.8 percent in 2000 to 36.1 percent in 2010, while nonfarm wage and salaried income have increased from 58.3 percent to 64 percent in the same period

(Khandker, Samad, and Ali 2013). The same study further reports that between 2000 and 2010, (a) the share of households with microenterprises has declined from 28.4 percent in 2000 to 24.3 percent, and (b) the number of workers per microenterprise has declined from 1.6 to 1.4. Overall, microenterprises generated less employment in 2010 than in 2000.

While the impacts of microfinance cannot be denied, it is hard to establish that access to microfinance significantly contributed to the general wage pattern, especially sudden rise since 2005. One can do some simple calculations using the numbers reported in Khandker, Samad, and Ali (2013). Suppose that the MFI loans generated a net rate of return (i.e., after paying about an interest rate of about 15 percent to MFIs) of 10 percent on micro-enterprise investment. Now, given per capita income is about US$750 and per capita MFI loan is US$36, the contribution of the loan to per capita income would be about 0.48 percent {($36 × 0.10) ÷ 750}. This implies that, at the national level, the impact of MFIs on per capita income generation is likely to be small at any reasonable assumption about the rate of return.[13] As a matter of fact, regression results in Khandker, Samad, and Ali (2013) show that presence of commercial banks or microcredit program in the village has no significant effects on household participation in microenterprise activities.

10.5 Income Sources and Change in Poverty

This section presents the results of our analyses of the contributions of each of the key income sources in poverty reduction. The analytical approach is simple. We first calculate the actual change in the head-count poverty rates between HIES rounds; and then we hold one of the income components constant at the previous round and simulate the changes in the incidence of poverty. The results are presented in Table 10.7, which strongly reinforce the earlier points in the paper: the labor markets and remittances have played the most significant roles in reducing poverty in Bangladesh over the past decade.

For illustration, consider the changes in poverty between 2000 and 2005. It is seen that rural poverty rates declined by 16 percent over the period. But if the 2005 wage rates of the agricultural workers had remained at the 2000 level, all other things being equal, rural poverty would have declined by only 7.3 percent instead of 16 percent. Similarly, if nonfarm wages are held constant at the 2000 level, the rural poverty incidence would have dropped by 7.7 percent, less than half of the actual decline. If manufacturing wages and remittances were held constant at the 2000 level, the poverty rate would have decreased by 2.4 and 10.1 percent, respectively.

[13] Note that our emphasis here is on the impacts of MFI loan at the national level, not at the household level.

Table 10.7: Simulated Effects of Changes in Income Sources on Poverty Reduction in Bangladesh, 2000-2010

Income components*	From 2000 to 2005			From 2000 to 2010			From 2005 to 2010		
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
Actual % change in poverty (Head count)	-16.0	-11.8	-18.0	-29.7	-38.8	-33.5	-16.4	-30.6	-18.9
Simulated % changes in poverty holding each variables constant at 2000 or 2005									
Agricultural daily wages	-7.3	-3.4	-8.7	-8.6	-7.6	-12.2	2.2	-6.7	0.1
Nonfarm daily wages	-7.7	2.5	-9.1	-5.1	-1.7	-8.3	7.0	1.9	5.3
Manufacturing wage income	-2.4	11.8	-3.5	-0.4	5.9	-3.5	9.0	4.8	7.6
Remittances	-10.1	-1.7	-11.8	-11.4	-12.7	-14.9	0.7	-8.6	-1.5
Safety net transfers	-16.0	-11.8	-18.0	-29.7	-38.8	-33.5	-16.4	-30.6	-18.9

* Agricultural and nonfarm wages include both daily wage of casual workers and daily wage equivalent of the salaried workers.

Source: Authors' calculations based on the HIES Rounds: 2000, 2005, and 2010.

Three broad observations from Table 10.7 are worth highlighting. First, in terms of magnitudes, wage incomes have been more important in reducing poverty between 2005 and 2010 than between 2000 and 2005. In particular, while holding wages constant at 2000 level resulted in lower reduction of poverty, holding them constant at 2005 would have resulted in an increase in poverty in 2010 relative to 2005. This finding reinforces the relevance of Lewis's (1954) theory in explaining real wage escalation in Bangladesh. Second, the incomes from the manufacturing wages appear to have made the largest contribution to the poverty reductions in Bangladesh since 2000. If the manufacturing wages did not change, incidence of urban poverty would have increased; and rural poverty would have declined moderately between 2000 and 2005 and increased between 2005 and 2010. Finally, the actual and simulated poverty reduction effects remain the same for safety net transfers in all three time periods. This implies that the public transfers, as captured by the HIES survey rounds, had no effects on poverty reduction in Bangladesh since 2000.[14]

10.6 Conclusions

Real wages in Bangladesh, especially in rural areas, have escalated in recent years. This is quite contrary to previous studies, which reported declining real wages, even during the height of green revolution. Using data from several sources, this chapter has (a) documented this unusual, but so far persistent, trend in real wages, (b) triangulated the evidence in light of the alternative theories of wage determination and economic development, and (c) presented evidence on the effects of wage escalation on poverty reduction in the country.

The study finds a consistent pattern in all data sets: after a long period of stagnation, real wages, especially in rural areas, began to grow at a faster pace in the past few years. This is likely an outcome of the government's strategies that capitalizes on the country's comparative advantage in labor intensive technology. A prominent outcome of such a development strategy is the rapid expansion of ready-made garment industries, as well as associated linkages, during the past three decades. Since the manufacturing sector offers better-paid jobs than the informal and agricultural sectors, expansion of garment sector has helped more workers, including the ones migrated from the rural area, improve their incomes and livelihoods.

[14] The safety nets programs in Bangladesh are geographically targeted and hence may not be adequately represented in the HIES survey, which is nationally representative and based on a PPS sample.

Whether this rising trend in real wage will continue in the foreseeable future was beyond the scope of this study. However, given rising labor costs in China and India, Bangladesh is expected to enjoy comparative advantage in labor-intensive industries in the years to come.

A central premise of this chapter has been to find a theoretical explanation for this unusual yet persistent rising trend in real wages. The convergence of rural and urban wages in recent years, as well as a linear trend in labor productivity, clearly suggest that this trend cannot be explained by neoclassical theory of wage formation unless there have been other policy-induced factors. There are two such commonly perceived factors: a massive increase in public transfers and accelerated efforts by the highly acclaimed microfinance programs in the country. However, the evidence does not support either of these two alternative explanations. Both the MFI loans and public transfers are just too small to drive a sharp escalation of real wage rates. In particular, our analysis suggests that, at the national level, a 10 percent rate of return on MFI loan can lead to less than half a percentage point increase in per capita income; and other things remaining the same, holding public transfer constant at 2000 level does not make any difference in the incidence of poverty in the subsequent HIES survey rounds.

The other two theories—namely subsistence and nutrition-based efficiency wage theories—cannot explain the rising trend either. These theories are rooted in the idea that in countries with abundant supply of workers, it is optimal for the employers to pay a wage rate that is enough to meet the subsistence or nutritional needs of a worker. We have not tested these alternative theories in the chapter, but if one agrees with the trends and other analysis in the chapter, the conclusion should be obvious: a sudden and persistent increase in real wage rates is contradictory to these theories. Thus, we conclude that recent trend in real wages in Bangladesh can only be explained by the Lewis (1954) theory of economic development with unlimited supply of labor.

Rising real wages have profound policy implications. Our results clearly suggest that the combination of increased job opportunities, higher wages, and more remittances have been the main forces behind Bangladesh's remarkable record of poverty reduction over the past decade. Overall, these factors have made greater contributions to poverty reduction than government transfers and the expansion of microfinance institutions. However, if the workers' productivity does not keep up, Bangladesh can lose the labor costs advantage that it has enjoyed for decades. Furthermore, to ensure continued inflow of remittances, the other key driver of poverty

reduction, the Bangladeshi workers will have to remain globally competitive. Therefore, well-designed public investments in education and other human capital development will be critical to sustaining the rising real wage trend long enough for the country to move to the subsequent stages of economic transformation.

Increasing demand for labor due to growing manufacturing sector also has implications for long term food security. Rural workers will no longer be in abundant supply. This calls for a reorientation in agricultural policies with due attention to improving overall agricultural productivity in light of rising labor costs. Agricultural mechanization, which has historically been taken with caution due to the fear of labor displacement, should now be gradually promoted through policy actions. Finally, as more people find better-paying jobs, the number of poor will decline. A logical response to this trend is redesigning the country's safety net programs so as to target a smaller group of vulnerable populations that is unable to participate in the labor market.

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